

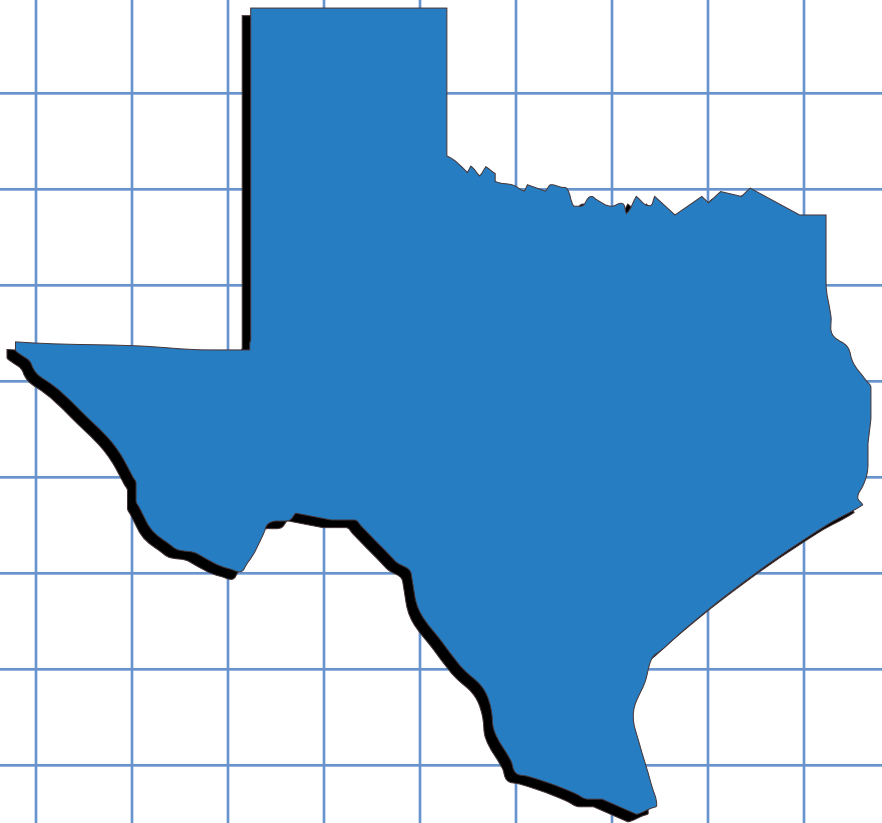
Municipal Solid Waste Plan for Texas

*Executive
Summary*

January 1995



TEXAS NATURAL RESOURCE CONSERVATION COMMISSION



Municipal Solid Waste Plan for Texas

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*SFR - 17A
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Plan Overview And Background Information

In 1993, the Texas Legislature enacted Senate Bill (S.B.) 1051, which included an amendment to the *Texas Solid Waste Disposal Act* (TSWDA) (V.T.C.A., Health & Safety Code, Chapter 361) to direct the Texas Natural Resource Conservation Commission (TNRCC) to prepare a Comprehensive Municipal Solid Waste Management Strategic Plan for Texas. Prior to enactment of S.B. 1051, the TSWDA already included a requirement that TNRCC prepare a state solid waste strategic plan for wastes under its jurisdiction. The *Municipal Solid Waste Plan For Texas* is intended to satisfy both the “comprehensive” municipal solid waste (MSW) planning requirements of S.B. 1051, and the “strategic” planning requirements, as they pertain to MSW, that were already in the TSWDA. This is the first comprehensive state plan for the management of MSW since the *Solid Waste Management Plan For Texas* was prepared by the Texas Department of Health in 1981.

The purpose of the plan is to address the existing and expected future MSW management needs of Texas. The plan examines the MSW stream, evaluates existing solid waste management systems, assesses present and future needs, examines alternative measures to address those needs, and proposes goals, objectives, and options to help guide MSW management in Texas. The plan is not a regulatory document, and it is not adopted as a rule or regulation.

All elements of the plan are supportive of the hierarchies of preferred management methods for MSW and municipal sludge established by the TSWDA, as outlined below.

For municipal solid waste, not including sludge, the following methods are preferred, in the order listed:

- Source reduction and waste minimization;
- Reuse or recycling of waste;
- Treatment to destroy or process waste to recover energy or other beneficial resources, if the treatment does not threaten public health, safety, or the environment; or
- Land disposal.

For municipal sludge, the following methods are preferred, in the order listed:

- Source reduction and minimization of sludge production and concentrations of heavy metals and other toxins in sludge;
- Treatment of sludge to reduce pathogens and recover energy, produce beneficial byproducts, or reduce the quantity of sludge;
- Marketing and distribution of sludge and sludge products, if the marketing and distribution do not threaten public health, safety, or the environment;
- Applying sludge to land for beneficial use;
- Land treatment; or
- Landfilling

MSW Management In Texas

All laws and regulations pertaining to MSW management at the state level must comply with minimum federal standards established by the U.S. Environmental Protection Agency (EPA). The principal federal statute guiding EPA is the *Resource Conservation and Recovery Act* (RCRA). Subtitle D of RCRA (Subtitle D) was recently amended to include much more stringent requirements for landfill design, construction, operation, and closure. Implementation of Subtitle D has had a significant effect on the costs associated with a landfill.

TNRCC is the primary state agency for solid waste management, under authority of the TSWDA. TNRCC accomplishes its mission through: permitting and monitoring MSW facilities; developing and enforcing MSW regulations; administering waste reduction and pollution control programs; providing financial assistance to local governments; conducting public awareness programs and producing educational materials; and providing technical training programs. Requirements for the management of MSW in Texas are set forth in TNRCC's *Municipal Solid Waste Regulations*. Some important MSW management functions of other state agencies are listed below.

■ *Texas General Land Office (GLO)*: Texas Corporate Recycling Council; "Buy Recycled" public awareness program; "Adopt-a-Beach" litter control program.

■ *General Services Commission (GSC)*: Secures options for recycled materials in state agency purchasing; encourages local governments to "Buy Recycled" through State Cooperative Purchasing Program.

■ *Texas Department of Commerce (TDoC)*: Programs to develop markets for recyclable and recycled materials.

■ *Texas Department of Transportation (TxDOT)*: "Don't Mess with Texas" and "Adopt-a-Highway" litter control programs.

■ *Texas Water Development Board (TWDB)*: Low-interest financing to local political subdivisions for development of MSW facilities.

■ *Texas Engineering Extension Service (TEEX)* and *Texas Agricultural Extension Service (TAES)*: Research and technical and educational assistance dealing with MSW management.

At the regional level, the state's 24 regional planning commissions (often referred to as councils of governments, or COGs) are designated as the entities responsible for developing and implementing regional solid waste management plans, and providing ongoing coordination and technical assistance to local governments in solid waste management activities. In addition to the COGs, solid waste management districts, river authorities, municipal utility districts, water control and improvement districts, and special utility districts are authorized through special or general legislation to perform various regional MSW management functions. Locally, municipalities and counties may regulate MSW and provide services in many locations in the state. Private companies also provide a significant level of MSW management services throughout the state.

Geographic Factors

With 254 counties covering a total of 267,338 square miles, the sheer size of Texas often presents challenges to statewide solid waste planning. The great diversity of physical features across the state can affect the siting, design, construction, and operation of solid waste management facilities. In addition, Texas borders four

other states and the Republic of Mexico, so the geo-political location of Texas often has significant implications to interstate and international solid waste management issues. Further, Texas has an extensive coastline on the Gulf of Mexico, so shipping, tourism, and tropical storms often pose special solid waste management problems.

Population And Economic Conditions

Population and economy are major factors affecting the amounts and types of solid waste generated. Between 1980 and 1990, the population of Texas grew from 14,229,191 to 16,986,510, and the current (1994) population is estimated to be 18,286,827.¹ The state's economy is also showing signs of continued steady growth through the 1990s.

The population of Texas is not evenly

distributed across the state. Although there are many urbanized areas in the state where economies of scale are usually achievable in managing MSW, many areas of the state are predominantly rural or agricultural in nature. In addition to being sparsely populated, these areas often lack the basic transportation and utility infrastructures necessary to support solid waste management services.

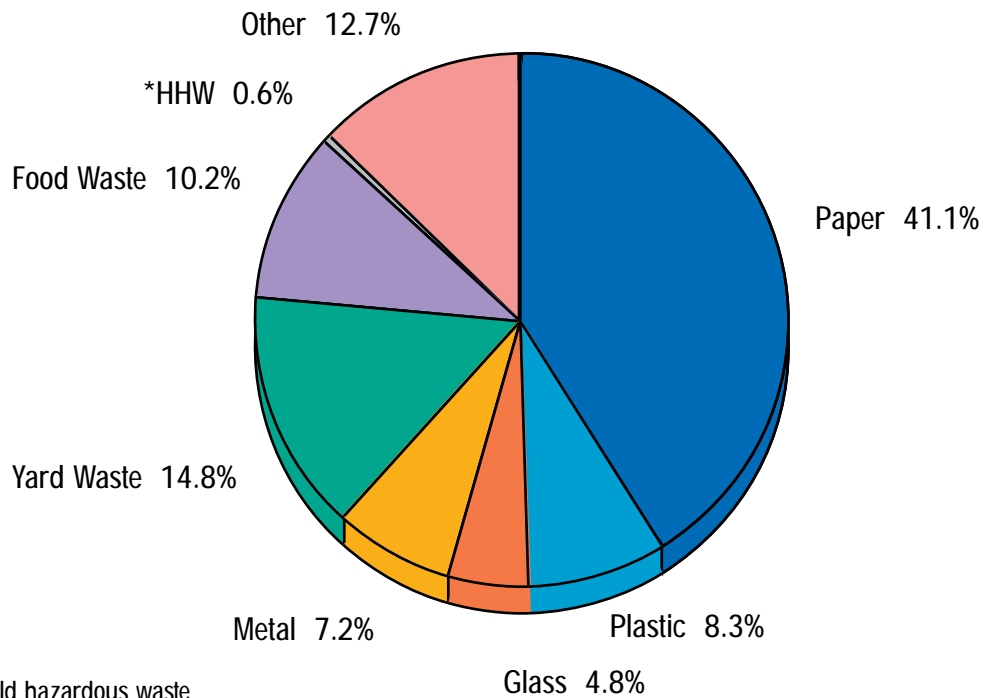
Analysis Of The MSW Stream

MSW typically comes from residential, commercial, and institutional sources. However, municipal sludge and septage, nonhazardous industrial waste, construction and demolition (C&D) waste, and other types of wastes may be accepted at many MSW facilities. As indicated in Figure 1a, the largest single component (by weight) entering the typical MSW stream in Texas is paper at 41.4%, followed by yard trimmings at 14.8%, and food waste at 10.2%.² As shown by comparison with Figure 1b, a proportional breakdown of Texas' typical MSW stream includes 4% more paper and food waste than the national average, and about 3% less yard trimmings than the national average.³ In considering this information, it should also be noted that the components of the

waste stream vary greatly across different regions of the state.

For the plan base year of 1992, it is estimated that 18,103,276 tons of MSW were generated by typical sources (not including municipal sludge & septage, C&D waste, or industrial waste disposed of in MSW facilities). Of this total, 15,903,648 tons were ultimately disposed of in MSW landfills. Approximately 12% of the typical MSW generated in the state was recycled or composted, with the remainder going to incinerators or waste-to-energy (WTE) facilities. Relatively little MSW was exported or imported, resulting in no net effect on the total amounts of MSW generated or disposed of in the state. Based on 1992 reported data, only 1% of the total waste received by MSW facilities in Texas came from outside the state.

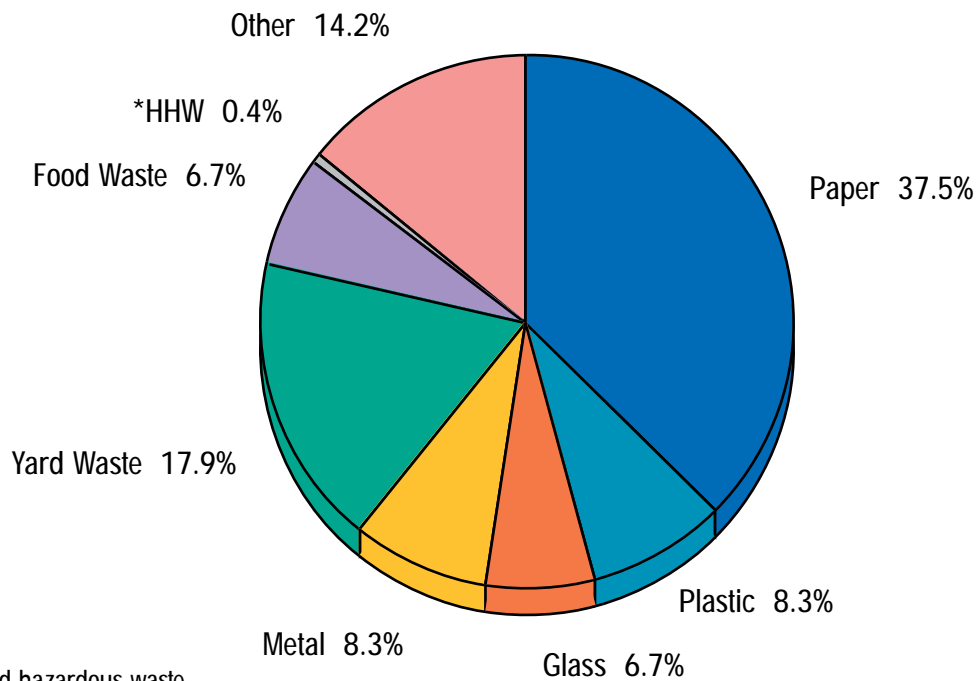
Figure 1a - Components of MSW Generation in Texas (by weight)



* Household hazardous waste

Source: R.W. Beck and Associates, 1991 Recycling Rate and Market Research (Texas Water Commission, January 1993)

Figure 1b - Components of MSW Generation Nationally (by weight)



* Household hazardous waste

Source: Franklin Associates, Ltd., Characterization of Municipal Solid Waste in the United States: 1992 Update, Executive Summary (U.S. EPA, July 1992).

Current MSW Management Activities

Collection, Transportation, Storage, and Transfer

MSW collection is performed by local governments and by private companies, with services sometimes provided jointly by both. In Texas, counties with over 30,000 population and all municipalities are required to assure that solid waste management services are provided to all persons in their jurisdictions. For the most part, urban areas have adequate collection services, but there are still rural areas of the state where collection services or other alternatives are inadequate. In areas where house-to-house collection is impractical, centralized citizens' collection stations, where community waste can be deposited by individuals and temporarily stored for centralized collection, are increasingly being considered as an alternative.

In addition, as more small landfills close as a result of Subtitle D requirements, the distance that MSW must be transported to regional landfills will be an important factor in costs associated with disposal systems. Transfer stations, where collected waste is consolidated for transportation to disposal sites, will also become more prevalent, and must be looked at as an alternative for many rural areas where operation of a local landfill is not possible. In 1992, there were 44 permitted MSW transfer stations in the state, handling a total of 1,416,391 tons of waste. As of August 1994, there were 38 permitted and 22 registered transfer stations in Texas, for a total of 60. Many of these facilities also serve as waste storage, sorting, and recovery facilities to some extent. With the recent number of landfill closures, many of the smaller communities in the state are relying more on transfer stations.

Waste Reduction

The TSWDA currently sets forth the state's goal of achieving a 40% reduction in the amount of MSW disposed of in the state. State waste reduction efforts are geared toward working to meet the state goal. Waste reduction entails both source reduction and recycling. At the forefront of TNRCC's waste reduction efforts is the CLEAN TEXAS 2000 Program, through which TNRCC provides a broad range of services, including: technical assistance and training in composting and community, workplace, and automotive waste recycling; a substantial amount of grant funding to local governments; a market development program for recyclable and recycled materials; and special assistance to small businesses.

Through CLEAN TEXAS 2000 Partnerships, businesses, industries, local governments, schools, and other organizations across the state are recognized for having implemented successful environmental programs or projects. In addition, CLEAN INDUSTRIES 2000 and CLEAN CITIES 2000 participants have pledged to reduce their waste disposal levels by 50% by the year 2000. CLEAN TEXAS 2000 also produces and distributes a wide variety of informational materials, and sponsors public awareness activities around the state.

TNRCC is involved in several other activities related to waste reduction. In cooperation with Keep Texas Beautiful, TNRCC has developed and distributed a number of elementary and secondary educational materials, and provided teacher training courses across the state. TNRCC's Office of Waste Exchange identifies and brings together generators and potential users of various wastes to help minimize disposal. TNRCC also monitors the progress being made toward achieving legislative directives to increase recycling by public agencies and newspaper publishers in the state. In fiscal year (FY) 1994, state purchases for recycled, reused, and environmentally-sensitive materials totalled over \$51 million; which accounted for about 67% of the \$76.5 million spent on

consumables. TNRCC's share of those purchases totalled almost \$700,000; which was about 43.5% of the \$1.6 million in consumables purchased by the agency. In addition, the recovery rate for newsprint in Texas was about 35%.

TNRCC also works with several boards and committees involved in waste reduction activities. TNRCC provides ongoing support to the Municipal Solid Waste Management and Resource Recovery Advisory Council, which reviews waste reduction policies and programs and provides input to TNRCC. Also, executive members of TNRCC, GSC, GLO, and TDoC form the standing Recycling Market Development Board. In addition, TNRCC recently completed work with a special task force (40% Task Force) appointed to evaluate overall waste reduction efforts in Texas and consider the possibility of implementing a phased-in ban on disposal of yard trimmings.

With funding assistance from TNRCC, the state's 24 COGs have initiated a number of implementation activities aimed at waste reduction, including: public awareness and educational programs; workshops, conferences, and technical training courses; and feasibility studies and other special studies. In addition, many of the COGs have passed-through a significant amount of grant funding to local governments to purchase equipment or develop facilities and programs for solid waste recycling and composting, as well as collection and recycling of used oil and oil filters. COGs have also assisted local governments in developing their own solid waste management plans. River authorities and various districts have also increased their involvement in waste reduction efforts. Private waste management companies, as well as non-profit organizations, also play important roles in all aspects of the state's waste reduction efforts.

There has been a significant increase in the number of waste reduction initiatives at the local level. Currently, TNRCC estimates that:

- 60% of all Texas communities offer some type of recycling;
- Over 120 communities in the state offer curbside recycling to over a million Texas households;
- There are at least 58 community- scale composting programs, and 36 organized

backyard composting programs, with many more individual efforts, not officially sponsored or reported by communities;

- Over 100 cities have "Don't Bag It" promotional programs; and

- More than 1,000 public used oil collection centers are now registered with TNRCC.

Other Resource Recovery Programs

The term resource recovery, which includes recycling, also encompasses the recovery of energy from solid waste. Due to the relatively low cost of landfilling, as well as the continued relatively low cost of energy, coupled with the high cost of establishing these facilities, the use of waste-to-energy and other alternative forms of resource recovery has not been prevalent in Texas. These types of resource recovery activities include:

- Methane recovery from landfills;
- Mass-burn and modular combustion facilities;
- Fluidized-bed combustion facilities; and
- Refuse-derived fuels (RDF) and combustion facilities.

In 1992, there were four permitted MSW waste-to-energy (Type V-RE) facilities in Texas, one of which did not operate during the year. The three operating facilities converted 28,402 tons of waste into energy. In addition, Texas had one facility permitted to develop RDF. There are also two methane recovery facilities currently operating in Texas.

MSW Processing, Including Incineration

Processing facilities are used primarily to reduce waste volume. These include solidification facilities (Type V-GG), shredding and grinding facilities (Type V-SG), baling facilities (Type V-WB), and incinerators (Type V-WI). In 1992, there were six permitted Type V-GG facilities in the state, which processed 148,470 tons of grease and grit trip waste, sludge, and septage; there was one Type I landfill which was also authorized to solidify liquid wastes on-site. In 1992, there were no permitted Type V-WB facilities in the state, but three landfills and one transfer station practiced waste baling. Three Type V-SG facilities were permitted in the state, and 14 landfills and four transfer stations also practiced shredding and grinding. There were 16 incinerators permitted in the state, but only eight were active, and accepted 30,160 tons of waste. There are also many other incinerators in the state located at hospitals, police stations, and industrial sites, but these facilities do not require a MSW permit. The ash from these incinerators, however, largely goes to MSW landfills.

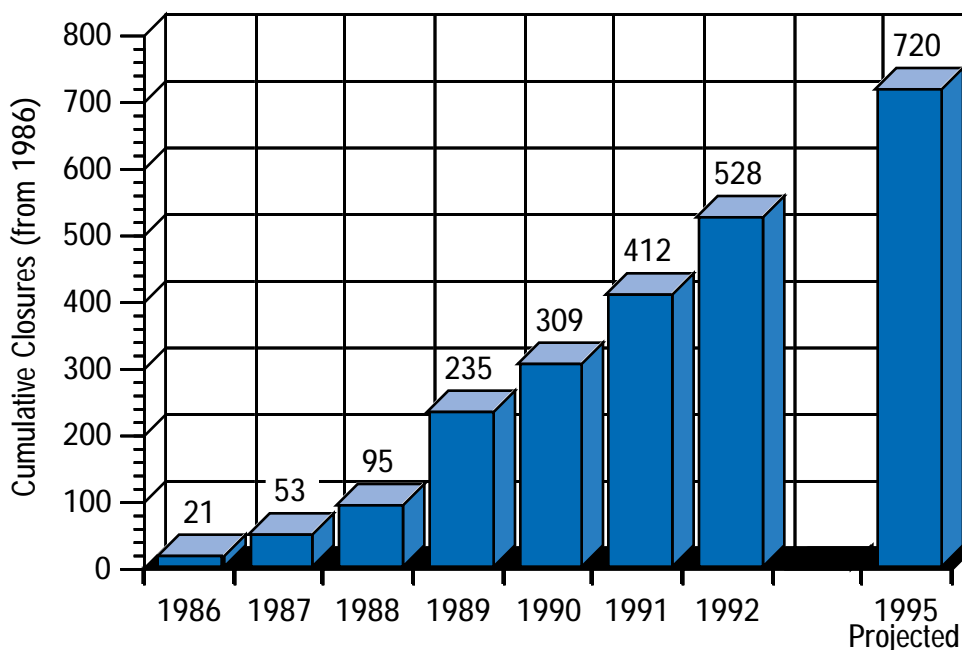
Disposal

Even with the significant advances being made in waste reduction, disposal remains the predominant method of solid waste management in Texas. The total amount of waste entering the state's permitted MSW landfills in 1992 was 21,675,661 tons, of which approximately 73.3% was typical MSW, 16.7% C&D waste, 7% nonhazardous industrial waste, and 3% sludge and septage.

The implementation of Subtitle D prompted over 500 landfill closures in Texas between 1986 and 1992, as indicated in Figure 2. About 90% of these closures involved small facilities. In 1986, 250 out of the 254 counties in Texas had at least one landfill but, as indicated in Figure 3, by the end of 1995 about half of the counties in the state are expected to have no landfills. By then, 228 landfills are expected to be open; 192 fewer than the 420 open at the end of 1992. (As of August 1994, the total number of landfills had already decreased to 242.)

If no additional landfill capacity is gained, by the end of 1995 the state may lose 2.3 years of capacity from the 20.3 years

Figure 2 - Cumulative Landfill Closures in Texas



Source: TNRCC Annual Facility Reports.

remaining at the end of 1992, due to waste intake alone. The state may also lose another 1.2 years of capacity due to continued closures related to Subtitle D implementation, leaving a capacity of 16.8 years. However, once the number of landfills remaining open is stabilized, new landfills and expansion of existing landfills will probably increase the capacity to the 20-year mark or above.

TNRCC is committed to not exceeding federal requirements, except where authorized by state law. However, even with this commitment, the costs associated with Subtitle D compliance will be substantial. By 1997, statewide costs for meeting Subtitle D groundwater protection and monitoring requirements are estimated to be \$70.8 million (in 1992 dollars) per year.⁴ Overall operating costs for landfills are projected to increase from 20% to 50%, depending on location, facility size, and extent of pre-existing environmental controls.

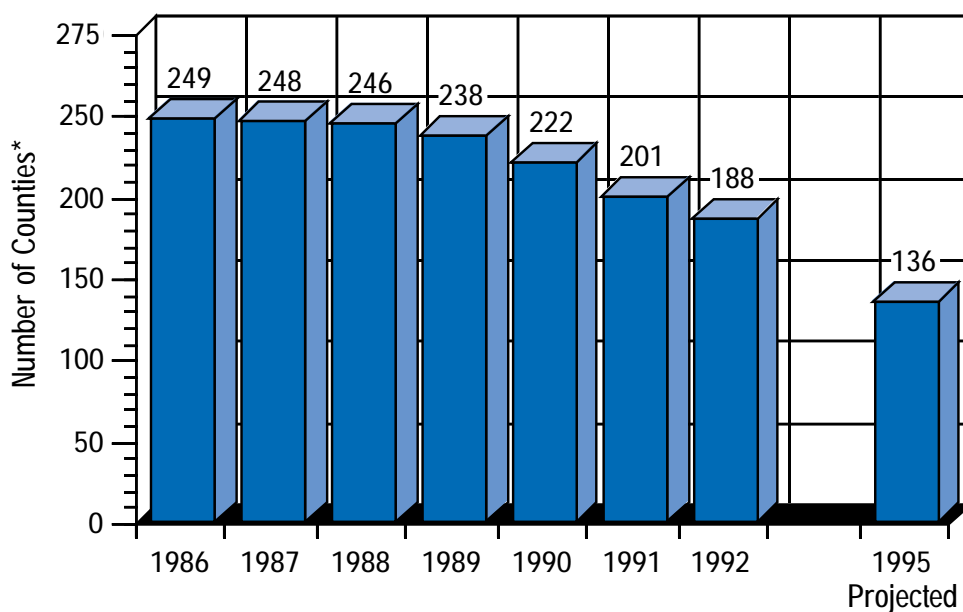
Small landfills (those accepting less than 20 tons per day) not evidencing groundwater contamination, and receiving not more than 25 inches of average annual precipitation, may qualify for an exemption from the leachate collection and corrective

action requirements of Subtitle D. However, according to a recent federal court ruling, they may not be exempt from ongoing groundwater monitoring requirements. Efforts are currently underway at the federal level to allow for alternative, less expensive groundwater monitoring approaches at these landfills, at the discretion of the state. At this time, 85 landfills in Texas have been approved for the so-called "West Texas" or "arid" exemption, with 5 additional landfills awaiting final approval.

Implementation of Subtitle D requirements will result in essentially two types of landfills, Type I and Type IV (those landfills receiving arid exemptions will comprise subtypes, Type I-AE and Type IV-AE). Landfills previously classified as Type II or Type III -- those serving smaller populations and requiring less than daily waste cover and compaction -- will have to upgrade to meet Type I standards. Type I landfills must provide at least daily cover and compaction. Type IV landfills are only allowed to accept C&D waste, rubbish, and brush, and must provide at least weekly waste cover and compaction.

Another effect of Subtitle D has been a

Figure 3 - Texas Counties with Open MSW Landfills



* There are 254 counties in Texas

Source: TNRCC Annual Facility Reports.

trend toward privatization of disposal services, as evidenced in Figure 4. By the end of 1995, about 70% of the landfills open will still be in public control, but a little over half of the state's remaining capacity will be in private control, indicating that although private facilities are fewer in number, they are generally larger and have more available capacity. Further, private companies will control about 65% of the total tonnage going to landfills.

Litter and Illegal Dumping Abatement

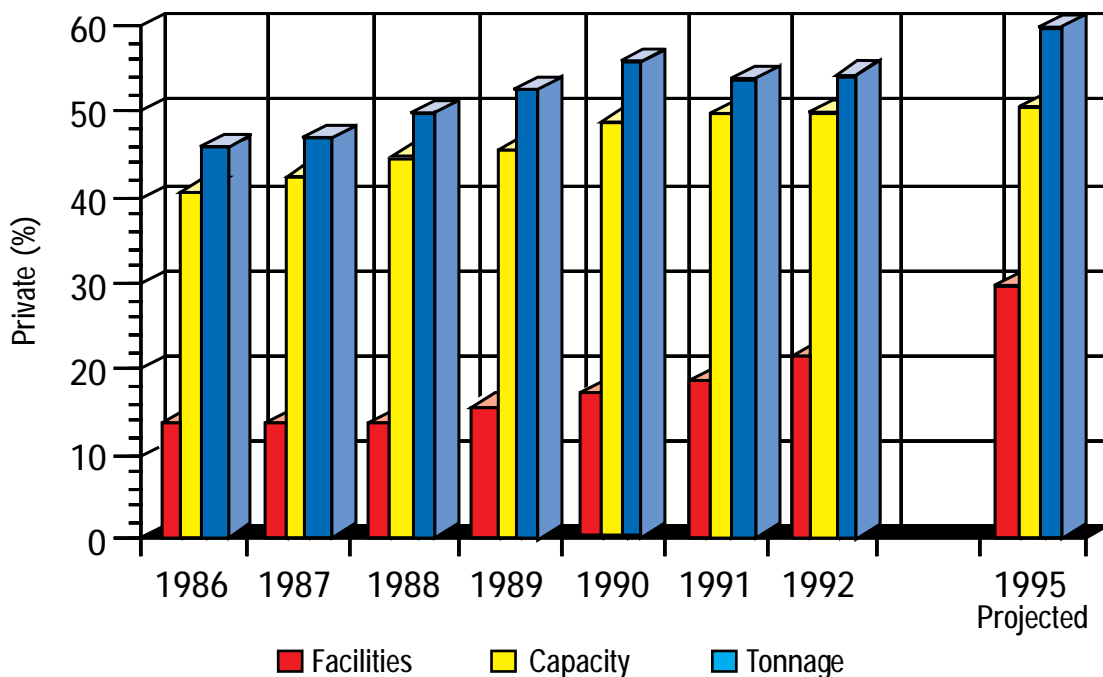
TNRCC now identifies about 500 new illegal dump sites each year. However, this is only a portion of the illegal dump sites present in Texas. Local governments identify and deal with a large number of instances of illegal dumping on their own. With the closure of many of the state's smaller landfills, and the accompanying increased costs for disposal, illegal dumping is on the rise.

TNRCC programs include both enforcement and public awareness and local assistance. Complaints made to TNRCC about illegal dumping are followed up by

regional staff, and efforts are made to have responsible persons clean up the site. In addition, TNRCC's CLEAN TEXAS 2000 programs include a focus on litter abatement and informing citizens of acceptable waste disposal practices. TNRCC has also made available \$1,889,809 for 25 grants to local solid waste enforcement programs, on a 50/50 matching basis, resulting in identification of 7,212 litter and illegal dump sites by local enforcement officials.

In addition to TNRCC's programs, TxDOT's "Don't Mess With Texas" highway litter public awareness campaign, as well as its Adopt-A-Highway programs, have been highly successful. A survey conducted by the Institute for Applied Research, Sacramento, California, found that visible roadside litter in Texas decreased by 72% between 1985 and 1991. GLO's Adopt-A-Beach program, to encourage clean-up of Texas' beaches, is another successful statewide litter abatement effort. Many local governments and other entities are also conducting successful enforcement and public awareness and education programs geared toward illegal dumping and litter abatement.

Figure 4 - Trend Toward Privatization of MSW Disposal in Texas



Source: TNRCC Annual Facility Reports.

Funding

TNRCC's MSW management programs are funded primarily through a fee on the transportation and disposal of MSW in the state. The disposal fee is \$1.25 per ton if the solid waste is measured by weight. If the solid waste is measured by volume, the fee for compacted solid waste is \$0.40 per cubic yard or, for uncompacted solid waste, \$0.25 per cubic yard received for disposal at a landfill. Waste received at an incinerator or a shredding or composting facility is set at half the fee for solid waste received for disposal at a landfill. In addition, a refund/credit is authorized to be provided to the operator of a public or privately-owned MSW disposal facility for instituting composting programs for yard trimmings. Up to 15% of the disposal fees paid may be credited back to the operator if the funds are used for composting equipment or operations, and the compost is beneficially used. The credit may be increased to 20% of the fees paid if the operator also bans the disposal of yard trimmings at the facility.

By statute, at least half of the fee revenues are to be used for MSW permitting and enforcement programs and related support activities. The remainder of the funds may be used to support activities to enhance the state's solid waste management programs, such as grants to COGs and local governments.

Management Of Other Types Of Solid Waste

There are some specific types of waste that are not considered typical MSW but may still be accepted at many MSW facilities, having a potential impact on facility operations and capacity. These wastes include nonhazardous industrial solid waste, municipal sludge and septage, and C&D waste.

Nonhazardous Industrial Solid Waste

Industrial waste is not included in the definition of MSW, but nonhazardous industrial solid waste may be accepted at many MSW landfills. Nonhazardous industrial solid waste is divided into three classes: Class 1 (can pose a threat to human health or the environment); Class 2 (comparable to commercial or institutional waste); and Class 3 (inert and insoluble materials, comparable to C&D waste). A large amount of the total industrial solid waste generated is disposed of on-site. The remainder either goes to landfills with industrial permits or MSW landfills. Class 1 nonhazardous industrial solid waste may be accepted at authorized Type I MSW landfills with separately walled and lined sections constructed especially for receiving such waste.

In 1992, about 1.5 million tons of industrial solid waste were disposed of in MSW landfills, which was about 7% (by weight) of the total waste accepted by all MSW landfills in the state. Of these 1.5 million tons, only 11% was Class 1 waste, and only 1% came from outside the state. Since most of the industrial solid waste disposed of in MSW landfills is Class 2 waste, much of which may be recyclable, continuing efforts to increase commercial-sector recycling and waste exchange activities among industries should have a positive effect on mitigating the impact of industrial solid waste on MSW facilities.

Municipal Sludge and Septage

The implementation of Subtitle D has significantly affected liquid waste management in Texas. Liquid wastes such as sludge, septage, commercial food service grease, and grit trap waste must now be solidified in order to be landfilled. In 1992, about 1 million tons of these wastes were disposed of in landfills, but only about 20% had been solidified. In 1992, there were only

six processing facilities and one landfill in the state authorized to solidify liquid waste. Currently, there is a much greater demand for solidification services, prompting a number of applications for new Type V-GG permits. In addition, about a dozen landfills are now authorized to solidify liquid waste on-site.

Data for the base year 1992 is not readily available, but in 1991 there were 141 active land application sites in Texas, and a total of 123,299 tons of sludge and septage were accepted by these facilities. Continuing increases in landfilling costs due to solidification requirements and higher tipping fees will increase the demand for land application sites to accept sludge and septage. Also, by 1994, about 300,000 tons of sludge were being imported annually from other states, which further increases the demand for these sites.

Construction and Demolition Waste

Approximately 3.6 million tons of C&D waste were accepted by 291 of the 420 MSW landfills open in the state in 1992; a small amount was accepted by incinerators and WTE facilities. C&D waste made up about 16.7% (by weight) of the total amount of waste accepted by MSW landfills in 1992. There were 43 Type IV landfills open in the state, but only one-third of the total C&D waste disposed of in the state was accepted by these facilities. Sending more C&D waste to Type IV landfills might help free up more capacity for typical MSW, but the existing Type IV facilities are not distributed equally across the state. Of the Type IV landfills open in Texas, 37% were in Harris County alone; there were only seven facilities in the western part of the state. Further, only 23 of the 43 Type IV facilities open at the end of 1992 are expected to be open beyond 1995. However, since the final regulations implementing Subtitle D are not as restrictive for Type IV landfills, there may be more interest shown in opening additional facilities. In addition, C&D waste is largely reusable or recyclable, presenting a considerable potential for reducing this source of waste. However, contamination of C&D waste, especially from asbestos, degrades its recyclability in some cases.

Future Conditions

Table 1 lays out three different waste reduction scenarios for the future, with waste reduction in each scenario being gauged by the percent decrease over base year 1992 per capita (per person) landfill disposal rates. Data for 1992 is presented by calendar year, while data for subsequent years is presented by fiscal year (September-August). Also, FY 1993 and FY 1994 disposal amounts are estimated based on preliminary review of Quarterly Fee Reports; final figures from the Annual Facility Reports should be comparable. For each scenario, possible gains in landfill capacity due to new or expanded facilities are not taken into consideration, since this is an unpredictable factor. It is likely, however, that landfill construction and expansions will keep up with the demand for space. *Therefore, the different capacity figures are presented for comparison purposes, but not as a prediction of the actual landfill capacity that will be available in the future.*

Scenario 1:

No Continued Advances in Waste Reduction Beyond FY 1994

Scenario 1 provides a very conservative approach to the future of solid waste management in Texas, in that it assumes there will be no continued advances in waste reduction beyond FY 1994. This scenario could occur if no new initiatives were undertaken in waste reduction programs, if grant programs were cut back, and if regional coordination and planning were not continued.

Scenario 2:

Achieve a 20% Reduction in Per Capita Disposal Rates by the End of FY 2000

Scenario 2 provides a more moderate approach to the future of solid waste management in Texas. This scenario assumes that there will continue to be advances in waste reduction sufficient to achieve a 20% reduction in the per capita disposal rate by the end of FY 2000, using 1992 as a base year.

Scenario 3:

Achieve a 40% Reduction in Per Capita Disposal Rates by the End of FY 2000

Scenario 3 provides a comparatively aggressive approach to the future of solid waste management in Texas. This scenario assumes that there will continue to be advances in waste reduction sufficient to achieve a 40% reduction in the per capita disposal rate by the end of FY 2000, using 1992 as a base year.

Table 1 - Disposal Capacity Under Three Waste Reduction Scenarios

	Base Year* 1992	Estimated Current FY 1993	FY 1994	FY 2000	FY 2005
Scenario 1: No Continued Advances in Waste Reduction Beyond FY 1994					
Total Tons Disposed Of	21,675,661	21,700,233	21,522,909	23,917,134	26,053,658
Reduction Over 1992 Disposal		<0.1%>	0.7%	<10.3%>	<20.2%>
Population	17,632,332	17,958,512	18,286,827	20,318,262	22,133,296
Per Capita Disposal (lbs/day)	6.74	6.62	6.45	6.45	6.45
Reduction Over 1992 Per Capita		1.8%	4.3%	4.3%	4.3%
Remaining Capacity (years)**	20.3	19.6	18.8	11.2	5.4
Remaining Capacity (tons)**	440,730,048	426,263,226	404,740,317	267,288,617	141,355,784
Scenario 2: Achieve a 20% Reduction in Per Capita Disposal Rate by End of FY 2000					
Total Tons Disposed Of	21,675,661	21,700,233	21,522,909	19,990,013	18,213,779
Reduction Over 1992 Disposal		<0.1%>	0.7%	7.8%	16.0%
Population	17,632,332	17,958,512	18,286,827	20,318,262	22,133,296
Per Capita Disposal (lbs/day)	6.74	6.62	6.45	5.39	4.51
Reduction Over 1992 Per Capita		1.8%	4.3%	20.0%	33.1%
Remaining Capacity (years)**	20.3	19.6	18.8	14.0	10.2
Remaining Capacity (tons)**	440,730,048	426,263,226	404,740,317	280,653,406	185,846,229
Scenario 3: Achieve a 40% Reduction in Per Capita Disposal Rate by End of FY 2000					
Total Tons Disposed Of	21,675,661	21,700,233	21,522,909	14,991,517	8,231,258
Reduction Over 1992 Disposal		<0.1%>	0.7%	30.8%	62.0%
Population	17,632,332	17,958,512	18,286,827	20,318,262	22,133,296
Per Capita Disposal (lbs/day)	6.74	6.62	6.45	4.04	2.04
Reduction Over 1992 Per Capita		1.8%	4.3%	40.0%	69.8%
Remaining Capacity (years)**	20.3	19.6	18.8	19.9	29.5
Remaining Capacity (tons)**	440,730,048	426,263,226	404,740,317	297,654,435	242,475,628

Sources: Population projections from Texas State Data Center. Tons Disposed Of for 1992 taken from TNRCC Annual Facility Reports. Tons Disposed Of for FY 1993 and FY 1994 "estimated" from TNRCC Quarterly Fee Reports.

< > Denotes a gain, rather than a reduction, over tons of waste disposed of in 1992.

* 1992 data is for the calendar year. Beginning in FY 1993, data is presented by fiscal year (Sept. - Aug.).

** Does not take into account possible gains in capacity due to new or expanded facilities, or losses in capacity due to facility closures.

Reports On Specific Wastes Of Interest

According to the TSWDA, TNRCC is to report to the Legislature on the status of its programs dealing with *used and scrap tires*. The information presented in the plan is intended to satisfy that reporting requirement. In addition, there are several other individual wastes for which there may be interest in information concerning their management. Therefore, the plan also presents information concerning the management of: *used oil, household hazardous waste, lead-acid batteries, and other special wastes (asbestos, medical waste, dead animals, petroleum contaminated soil, and incinerator ash).*

Used and Scrap Tires

In 1991, S.B. 1340 established a waste tire recycling program, including a fee on the sale of tires to fund the Waste Tire Recycling Fund (WTRF), to be used by TNRCC to fund the cleanup of illegal tire disposal sites. In 1993, S.B. 1051 made several major amendments to the program. The objectives of TNRCC's WTRF program are four-fold:

- Clean up illegal waste tire sites in the state that contain whole used or scrap tires;
- Collect whole used or scrap tires that are generated on a daily basis by wholesale or retail dealers of new tires prior to being deposited in an illegal waste tire site;
- Reduce the number of tires going to landfills for disposal; and
- Provide a mechanism to recycle, reuse, or recover the energy from whole used or scrap tires or shredded tire pieces.

The processes utilized to meet the objectives of the WTRF program include interaction with and education of the regulated community regarding program requirements, and introduction of a field program that monitors the activities of the regulated community and, when necessary, enforces the rules and regulations that govern the program. As part of this enforcement effort, the legislation directed that TNRCC establish a Priority Enforcement List (PEL) listing those sites that present an existing or potential threat to public health and safety or the environment. Priority is to be given to those sites for which responsible parties cannot be located.

TNRCC staff have identified in excess of 723 sites and have listed them on the PEL. As of August 1994, 386 of these sites were documented as being cleaned up and closed. An additional 151 sites have been assigned to waste tire processors and cleanup is underway. As part of this effort, during the two years since implementation of the WTRF, approximately 57 million tire units have been reported by waste tire processors as shredded and thus eligible for reimbursement from the WTRF.

Used Oil

In 1991, the Legislature enacted the *Used-Oil Collection, Management, and Recycling Act*, prohibiting the disposal of used oil in landfills or otherwise discharging into the environment. As part of the used-oil disposal ban, TNRCC has also banned by regulation the disposal of used oil filters. In order to fund the implementation of programs in support of the disposal ban, the act also established a Used-Oil Recycling Fund. A \$0.02 per quart fee is now collected on the first sale of new motor oil sold in Texas. Using money from the Used-Oil Recycling Fund, TNRCC has issued grants totalling over \$4 million; of which, \$2.5 million was used for direct grants to 51 entities, and \$1.5 million was provided in grants to the state's 24 COGs. In FY 1995, TNRCC expects to issue an additional \$1.4 million in grants for collection and recycling programs. In addition to the grants, TNRCC has conducted numerous public information and awareness programs, as well as direct assistance and support for collection and recycling programs. The results of TNRCC's efforts include:

- More than 1,000 businesses recruited to serve as public used-oil collection centers;
- Of the 1,100 public and private registered used-oil collection centers in 1993, 553 reported collecting an annual total of 749,908 gallons of used oil;
- Establishment of a \$500,000 Used-Oil Reimbursement Fund, to reimburse collection centers for disposal of contaminated used oil;
- Conduct of 38 Texas Country Cleanups in rural Texas, which collected 32,248 gallons of used oil and 36,968 used oil filters; and
- Paid used-oil public service announcements in Spanish and English, as well as development of a number of fact sheets, fliers, posters, and bumper stickers using the themes "Only a Dipstick Would Dump Motor Oil on Texas" and "You Dump It, You Drink It."

Household Hazardous Waste

Some household wastes may contain constituents which may be detrimental to public health and the environment. Household cleaners, paints, pesticides, herbicides, and other chemicals and materials all can contain potentially harmful ingredients. Although certain wastes from households have the potential to be hazardous to public health or the environment, under EPA regulations, "household waste" does not fall under the definition of hazardous waste, which has more stringent management requirements than municipal solid wastes. Although these materials are not classified as hazardous, TNRCC and other state agencies have developed programs to encourage and support their proper management.

By weight, household hazardous waste (HHW) makes up about 1% or less of the total MSW stream. Of this amount, 80% goes to MSW landfills, and most of the remainder goes to wastewater treatment plants. The amount of HHW generated represents about 15 pounds per household per year. However, the average amount per household brought into collection events varies from 50 to 100 pounds.

In 1993, TNRCC provided \$1.1 million to seven grant recipients to conduct HHW programs. An additional \$1 million was awarded to eight grant recipients in 1994. TNRCC has also held 54 collection events in 1993 and 38 in 1994 under the Texas Country Cleanup Program, to extend the same recycling opportunities available in urban areas to rural/agricultural communities. TNRCC also provides public awareness and educational materials concerning proper management of HHW. In November 1994, TNRCC co-sponsored an annual Household Hazardous Waste Management Conference, held in Austin.

Lead-Acid Batteries

Lead-acid batteries, such as automotive batteries, contain several materials that can be harmful to public health and the environment, most notably lead and battery acid. In 1991, S.B. 1340 prohibited the disposal of lead-acid batteries in landfills. The law requires used batteries to be delivered to battery retailers, wholesalers, secondary lead smelters, or to collection and recycling facilities authorized by the EPA or the state. TNRCC's *CLEAN TEXAS 2000* programs include public awareness information concerning the proper disposition of lead-acid batteries. In addition, the HHW staff of TNRCC provides technical assistance to communities wishing to collect and recycle scrap batteries. Also, TNRCC is responsible for monitoring the sales and exchange of batteries by Texas retailers.

Other Wastes

There are several other wastes which may require special handling that are accepted at many MSW landfills. For most of these wastes, written authorization from TNRCC is required before they may be accepted, and facility operators must submit regular reports on the amounts of these wastes accepted. These special wastes include asbestos, medical waste, dead animals, petroleum-contaminated soil, and incinerator ash. Of these wastes, medical waste is currently the only type accepted by MSW facilities other than landfills; medical waste is also accepted by WTE facilities and incinerators.

Almost one-fourth of the MSW landfills open in 1992 accepted petroleum-contaminated soil, which accounted for 2.5% (by weight) of the total waste accepted by MSW landfills in the state. However, petroleum-contaminated soil, if not a Class 1 industrial waste, may be authorized for use as daily cover at landfills. When combined, all of the other special wastes mentioned above accounted for about 1% of the total waste accepted by MSW landfills in the state in 1992. Although dead animals accounted for only a fraction of this 1%, 40% of the landfills in the state accepted dead animals. This is significant, since dead animals must be covered immediately upon receipt, using more cover material than is required for most other types of waste. For instance, discarded deer carcasses pose a prevalent problem in many rural areas of the state during the hunting season.

Regional Summaries

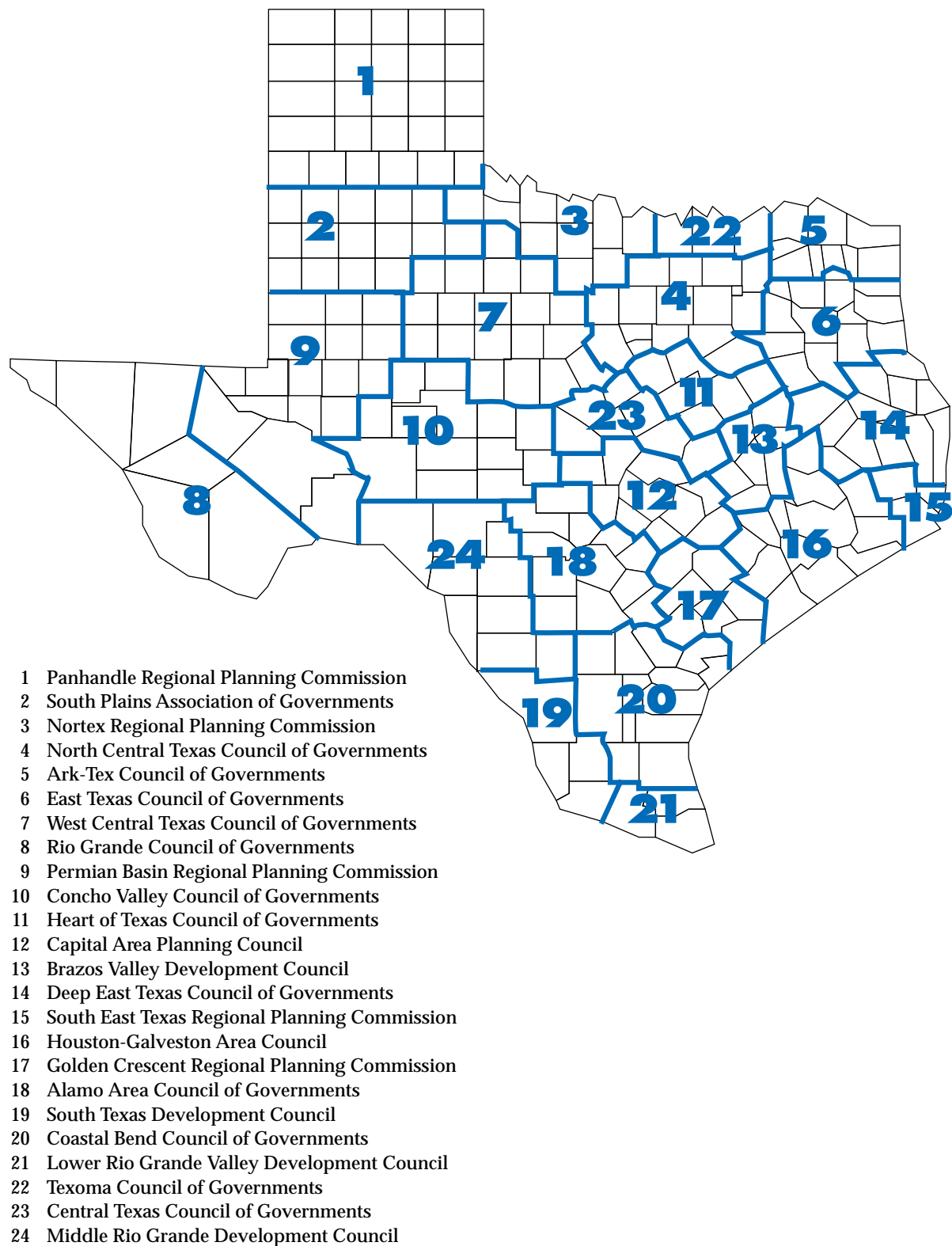
Regional Solid Waste Planning

In 1983, the *Comprehensive Municipal Solid Waste Management, Resource Recovery, and Conservation Act* (MRRCA) authorized the state's 24 COGs (Figure 5) to develop regional solid waste management plans, and local governments to develop local solid waste management plans. In 1989, the Texas Legislature amended the MRRCA to "require" that the regional and local plans be developed. This requirement, however, is contingent upon the availability of grant funding from TNRCC to complete the plans. Because TNRCC believed that establishing regional plans first, before local plans, would provide important guidance and data for local governments who may not have immediate need for a more detailed local plan, regional planning was identified as an initial priority by the agency.

Using grant funding from TNRCC, all of the 24 COGs have completed a plan and submitted it to TNRCC for review and adoption. Twelve of these plans have been adopted, with the rest expected to be adopted in the near future. In addition, there are five local solid waste management plans being developed by subregional groups of local governments.

Beginning in FY 1993, TNRCC also began providing grant funding to the COGs to not only complete the plans, but to begin implementing programs recommended in those plans. This implementation effort has included regional coordination efforts by the COGs, as well as projects and pass-through grants to local governments. The range of projects funded from these grants include: studies for integrated solid waste management facilities; construction of recycling and composting facilities; equipment for regional and local recycling programs; workshops and public education programs; and other projects and programs in support of state and regional solid waste management goals.

Figure 5 - Solid Waste Management Planning Regions



Planning Region Summaries

In developing their regional solid waste management plans, the 24 COGs in Texas, even with their geographic differences, have identified a number of common issues and concerns. As indicated in Table 2, almost all of the COGs expressed concerns over: assuring adequate long-term disposal capacity; noticeable increases in illegal dumping; lack of coordination and cooperation among various solid waste management entities; insufficient markets for recyclable and recycled materials within reasonable distances; and inadequate solid waste management services in rural or unincorporated areas.

Available data reinforces the concerns many of the COGs have over long-term disposal capacity; the 20 years of remaining disposal capacity estimated for Texas as a whole is not shared by every region in the state. At the end of 1992, the remaining disposal capacity for nine of the 24 COGs was less than the state average; by the end of 1995, when Subtitle D is fully implemented, this number is expected to increase to 13. Even those regions with several years of remaining disposal capacity may experience shortfalls at more localized levels.

All counties with populations over 30,000 are required to assure that adequate solid waste management services are provided in their unincorporated areas, either by a public or private entity. However, 70% of the counties in Texas have populations under 30,000 and, according to most of the COGs in the state, a number of these rural counties contain underserved or unserved areas. This, coupled with numerous landfill closures, has led to an increase in illegal dumping in many locations.

Border Region

The extensive border Texas shares with Mexico has given rise to some particular solid waste management concerns. In 1992, there were 1,192 colonias identified in the 14 Texas counties bordering Mexico. Colonias are unincorporated but often densely populated areas with generally substandard housing, utilities, and sanitation. The continued creation of colonias is largely attributable to a shortage of affordable housing for a rapidly increasing low-income population, as well as inadequate or unenforced subdivision controls.

In addition, there are several American-owned industries, or *maquiladoras*, located across the border in Mexico. According to Mexican and international laws, certain industrial wastes from *maquiladoras* must be shipped back to the U.S. Although industrial waste from Mexico only represents a small portion of the total waste accepted by MSW facilities in Texas, there is uncertainty about the potential for additional wastes to enter these facilities, especially with the implementation of the recent North American Free Trade Agreement (NAFTA).

A major impediment to the MSW planning process in the border region is the lack of MSW management information for the region. With support funding from EPA, TNRCC has been working to identify information needs and possible approaches to obtain that information.

Table 2 - Most Prevalent Solid Waste Management Concerns Identified by the 24 Texas COGs

SOLID WASTE MANAGEMENT CONCERNS IDENTIFIED	BY NUMBER OF COGS
1. Assuring adequate long-term disposal capacity. _____	19
2. Noticeable increases in illegal dumping. _____	19
3. Lack of coordination and cooperation among various SWM entities. _____	18
4. Insufficient markets for recyclable or recycled materials within _____ reasonable distances.	18
5. Inadequate solid waste management services in rural or _____ unincorporated areas.	17
6. Insufficient educational programs, and low levels of public awareness _____ and participation in SWM activities.	16
7. Insufficient means available to handle problem wastes, such as used _____ oil and oil filters, old tires, agricultural waste, and household chemical products.	15
8. Numerous small landfill closures have resulted in longer haul _____ distances and the need to improve existing solid waste transportation systems.	13
9. Inability of local governments to deal with the continual imposition _____ of stricter regulations and resulting increases in SWM costs.	11
10. Continuing trend toward privatization of SWM services. _____	10
11. Need for more detailed SWM planning at the local level. _____	10
12. Need for more sources of available funding to implement needed _____ SWM programs and facilities.	9
13. Need for further consideration of alternative SWM technologies, such _____ as waste-to-energy, conservation, and refuse-derived fuel.	8
14. Need for further consideration of alternative SWM methods, such as _____ variable collection rates and disposal bans on certain materials.	8
15. Need for further consideration of alternative institutional arrangements for _____ SWM, such as public/private partnerships and solid waste districts.	8

Waste Reduction Performance

Waste reduction efforts include recycling and composting, reuse and exchange, and source reduction. Several successful waste reduction programs have been implemented in Texas at the state, regional, and local levels, and progress is being made toward reducing the total amount of waste disposed of in Texas.

Has Texas Met the 40% Goal?

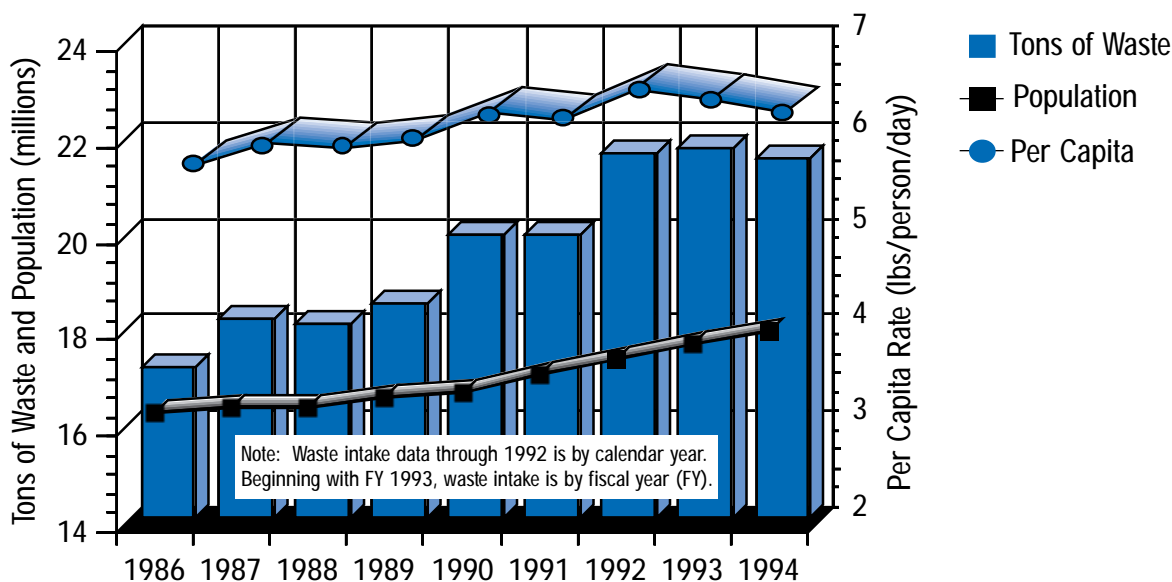
In 1991, the Texas Legislature set a 40% recycling goal for the state, to be achieved by January 1, 1994. In 1993, the Legislature changed this goal to a 40% reduction in the amount of municipal solid waste disposed of in the state, still to be achieved by January 1, 1994. The base year for measuring progress was set at 1991. Progress is to be computed by comparing the total number of tons disposed of in the year under comparison to the total number of tons disposed of in the base year. The measurement of progress may be adjusted for changes in population, tons of solid waste imported and exported, and other relevant changes between the baseline year and the comparison year.

The target date has now passed, and the state has not yet attained this goal (see Figure 6), even if progress is measured by the per capita disposal

rate rather than total tons disposed of in the state (import/export essentially cancel each other out). However, based on preliminary estimates, the per capita disposal rate now appears to be on a downward trend, and the total amount of waste disposed of in MSW landfills appears to have also peaked and may now finally be declining.

Although Texas has not reached its 40% goal, it is clear that significant progress is being made. In January 1993, TNRCC released a study entitled *1991 Recycling Rate and Market Research*, prepared by R.W. Beck & Associates. The study relied on voluntary surveys to glean sufficient data to estimate a state recycling rate. According to the study, the estimated recycling rate for the major components (i.e., glass, metals, paper, and plastics) of typical (i.e., residential and commercial) MSW in Texas in 1991 was 9%, with a projected 1992 rate of 10% and the 1994 rate expected to be 12%. However, with composting included, TNRCC estimates that the total recycling rate for 1994 is probably closer to 14%. Out of the 43 states currently monitoring recycling rates, Texas ranks within the median group. Most of the states with higher rates than Texas have implemented one or more mandatory measures, whereas Texas relies primarily on voluntary measures at this time.

Figure 6 - Waste Intake of MSW Landfills and State Population



Sources: Population data from Texas Data Center. Waste intake data through 1992 from TNRCC Annual Facility Reports. Waste intake data for FY 1993 and FY 1994 "estimated" from TNRCC Fee Reports.

If Not, Why?

The deadline for achieving the original 40% recycling goal was set at January 1, 1994. While the Legislature changed the goal in 1993, the original January 1994 deadline was retained. It was probably unrealistic to expect the state to achieve that level of waste reduction within one or two years, especially using only encouragement of voluntary programs. Many of the programs funded through the CLEAN TEXAS 2000 grant programs are still maturing and could only now be expected to have measurable effects on the state's waste reduction rate. In addition, many local leaders have been too involved with trying to keep up with the new Subtitle D requirements to look at also instituting major new waste reduction initiatives.

Why Reduce Waste?

Reducing the amount of waste Texans generate and dispose of makes sense for several reasons. Waste reduction efforts conserve limited natural resources and help minimize air and water pollution. In addition, waste reduction efforts help conserve landfill space. Building new landfills is expensive, and often conflicts with residential, agricultural, and other land uses. From a purely economic point of view, less waste generally equates to greater efficiency. Waste reduction especially makes economic sense if collection and disposal costs are volume-based. Even when the costs of waste reduction efforts do not seem justified, a full-cost accounting analysis can often reveal a number of hidden costs associated with disposal.

What is the 40% Waste Disposal Reduction Goal?

The original 40% recycling goal and the subsequent goal of a 40% reduction in the amount of MSW disposed of in the state were based on general assumptions about what could be accomplished in Texas, as well as goals established by other states. However, the problem with the 40% goal was not whether it could be achieved, but how long it would take to achieve it and how aggressive the state would need to be to ensure that the goal was met. There also have been some continuing questions about an appropriate basis for a statewide goal. In evaluating a new goal for the state, the following questions need to be addressed: *“What is the best method to gauge the effectiveness of our waste reduction efforts?”*; *“What should be the base year for any state goal?”*; and *“What should be the timeframe for achieving the goal?”*

MEASUREMENT OF PROGRESS

Many states set goals for the level of recycling, which was the original basis for Texas' goal. However, it has proven difficult to obtain thorough data on the growing recycling industry in Texas, since most facilities are not subject to permitting or registration requirements, and the measurement parameters and methods are not standardized. Because of the problems associated with measuring recycling rates, some states, including Texas, now base their goals on a reduction in the amount of waste disposed of statewide. In Texas, the total tons of waste disposed of in MSW facilities are already routinely reported, which can serve as a basis for evaluating progress toward meeting the state goal. Monitoring the total tons of waste disposed of in MSW facilities provides a convenient and relatively reliable method of measuring the effectiveness of waste reduction efforts. However, only 11% of landfills in Texas reported using scales for measurement in 1992, which impinges upon the accuracy of reported figures.

Further, the existing goal was based on determining the reduction in the amount of *municipal solid waste* disposed of in the state. However, as explained in the plan, reports from landfills include all types of waste accepted, not just typical MSW. Although waste categorization data has been reported since 1992, the figures for various waste sources and waste types (e.g., MSW, Industrial, etc.) are approximations at best. Given that TNRCC's waste reduction programs address all types of wastes disposed of in the state, and it would make sense that the overall state approach should also address all wastes affecting the MSW management system, the plan proposes that the state goal address all solid wastes entering MSW facilities, and not just typical MSW.

Also, the legislation allows for adjustments for changes in population, import/export, and other relevant factors. Because importation and exportation of MSW in Texas currently have no net overall effect on the level of disposal in the state, the main proposed adjustment is to evaluate progress toward achieving the state goal according to the disposal rate per person, or

"per capita" rate. It should be understood, however, that even using a per capita disposal rate to evaluate waste reduction has a number of drawbacks: differing population estimates may be available; other factors not directly linked to population changes, such as economic activity, may affect waste disposal; and unforeseen events, such as natural disasters, may inflate disposal figures for a given year.

Understanding these drawbacks, TNRCC will be working to better standardize how progress toward achieving the state goal is measured and evaluated, both at the state level and for local communities, and future updates of the plan will incorporate improvements to measurement methods. In addition, TNRCC will continue efforts to monitor and evaluate, to the extent possible, the rate of recycling in the state.

BASE YEAR

Although the current statutory goal uses 1991 as the baseline year, it is considered more appropriate to utilize 1992 as the base year for measurement of statewide progress toward achieving the goal, for several reasons: TNRCC disposal figures for 1992 are used as base data for the plan; more specific and complete information is known about the data for 1992; although new statewide waste reduction programs were enacted by the Legislature in 1991, most of those programs were not fully in place and effective until later in 1992; and it appears that 1992 was the latest peak year for per capita disposal in Texas (1.23 tons/person/year; 6.74 lbs/person/day). *However, if goals are established to apply to individual local communities, either by the Legislature or by the communities themselves, consideration must be given to waste reduction measures already in place prior to 1992, and an appropriate method of calculation may need to be considered for local communities to account for those existing measures.*

TIMEFRAMES

With expected continuation of current programs and activities (and no new mandatory measures), preliminary trends indicate that, by the end of FY 2000, Texas may attain a 20% reduction in the "per capita" disposal rate for wastes entering

MSW landfills, using 1992 as a base year (see Scenario 2, Table 1). Based on this same trend, it would take until about FY 2008 to reach a 40% reduction in the per capita disposal rate. However, it will take several more years of data to establish a more reliable projection. Also, based on the experiences of several other states, the 20% level tends to represent a plateau mark for voluntary waste reduction measures, at least in terms of recycling, beyond which it has proven difficult to advance without implementing one or more mandatory measures.

Even though current trends suggest that it will be difficult to achieve a 40% reduction in the short term, without more aggressive measures, TNRCC will continue its efforts to reach the 40% target using the programs and tools currently authorized and available. In order to maintain the current program momentum, the plan retains the 40% waste disposal reduction goal. This goal is intended as a far-reaching objective towards which the agency will strive through its efforts to encourage further voluntary implementation of waste reduction measures, including continued financial and other incentive programs. The plan, however, does not set a target date for reaching this goal. Rather, a decision as to how aggressive the state should be in attempting to reach a 40% reduction, and a corresponding timeframe for achievement, will ultimately need to be made by the Legislature.

What is proposed by the 40% Task Force?

As directed in S.B. 1051, because the state did not achieve the 40% goal by the deadline of January 1, 1994, TNRCC formed a task force (40% Task Force) to consider recommending a ban on the disposal of yard trimmings. The Task Force also considered other waste reduction initiatives, since a yard trimmings ban could not be considered out of context of an integrated solid waste system. The Task Force consisted of 19 members, representing TNRCC, GLO, local governments, the Municipal Solid Waste Advisory Council, the private-sector waste management industry, and environmental organizations.

The Task Force Report, entitled *40% Waste Reduction Strategy*, outlines a four-phased approach to waste reduction, with a long-term goal of reducing the amount of waste going to landfills by 40% from 1992 levels. The Task Force believes that the proposed phased-in strategy follows a logical approach to implementing increasingly aggressive waste reduction; incorporating both positive and negative incentives. In particular, the strategy was designed with the intent to ensure that communities have sufficient time to implement the proposed aggressive waste reduction measures and allows cities the necessary flexibility to reduce waste in the manner most appropriate to meet their local needs. In addition, the Task Force believes that small communities (those with populations of less than 7,500) and Subtitle D arid exempt landfills should be exempt from compliance with the specifications of the waste reduction strategy.

The Task Force also believes that the rate of waste disposal reduction (based on the actual tonnage of waste disposed of in the state) should be measured in pounds per person per day. This standard of measurement would allow for population growth and would enable individual municipalities to gauge their own waste generation rates against the state rate. Additionally, the Task Force proposed to establish the baseline year of 1992, for which TNRCC calculated a per capita waste disposal rate of 6.74 pounds/person/day, setting the 40% reduction target at an estimated 4 pounds/person/day. The 40% Strategy is summarized below.

PHASE I

Measures included under Phase I are recommended for implementation beginning September 1, 1995. Many of these measures do not require additional legislative authority for TNRCC and could be undertaken immediately.

Grants Impact: The criteria for awarding the grants that are distributed by TNRCC from the MSW Fund should include consideration of the total amount of solid waste being generated in an area and the resulting potential for waste reduction.

Market Development Initiative: The 40% Task Force believes that both state and local governments should focus on developing markets for recyclable materials as well as on recycling, composting, and other forms of waste reduction. In particular, the purchasing power of state and local governments should be applied to purchasing and using secondary materials.

Statewide Technical Assistance on Full-Cost Accounting: The 40% Task Force believes that the state should promote municipal full-cost accounting by providing a standard accounting program and training city solid waste managers on how to use this, or another method, to incorporate full-cost accounting into their solid waste planning.

Increased Reporting Accuracy: Disposal operators' annual reports should be required to report where the waste they accept originates and from what type of generator (e.g., commercial, residential, or industrial). This would allow TNRCC, as well as individual communities, to reliably determine local progress toward the statewide goal and would facilitate exclusion of imported waste from goal calculations. The Task Force further believes that commercial recycling operations should be required to report, either on an annual or quarterly basis, the quantities of recyclable materials collected in their programs to the state so that a statewide recycling rate could be calculated.

The 40% Task Force also believes that scales should be required by September 1, 1996, at all disposal facilities, except those that have received an arid exemption. The Task Force recognizes that funding for conversion to scales for facilities that do not already have scales is a concern that would need to be addressed.

PHASE II

The 40% Task Force recommends that on September 1, 1997, Texas cities should become eligible for a solid waste disposal fee rebate if an individual city has implemented the elements included in Phases I and II and commits to implementing at least one of the measures included in Phase III or IV.

Disposal Fee Rebate Program: A disposal fee rebate program would make communities eligible for rebates of their solid waste disposal surcharge if the elements of Phases I and II have been met and they commit to implementing at least one of the waste reduction measures included in Phase III or IV. The specific amount of rebate a community would be eligible for would depend on the type of service initiated and program approval from TNRCC.

Required Municipal Waste Reduction Plans: A municipal waste reduction plan would essentially be a strategic plan that communities would submit to councils of governments and to the state, outlining the local strategy to reach the level of waste reduction necessary within the given timeframe.

Municipal Solid Waste Rate Structures and Enterprise Funds: Cities should be required to establish rates for their solid waste services and should operate their solid waste departments as enterprise funds.

PHASE III

The program elements of Phase III would become mandatory on January 1 of the year 2000 unless the statewide per capita waste disposal rate has decreased to at least 5.4 pounds/person/day (a 20% reduction from the 1992 baseline) by September 1, 1999. Also at this time, an across-the-board increase in the solid waste disposal surcharge would be implemented unless communities have completed the elements of Phases I and II, or have reached the 5.4 pounds/person/day benchmark. Individual communities would be exempted from all of the requirements of Phase III, including the increased disposal surcharge fees, if they can demonstrate that

they have locally reached the 5.4 pounds per capita waste disposal rate.

Commercial Recycling Initiative: The 40% Task Force believes that both state and local governments should be required to work with local businesses to facilitate increased commercial recycling.

Residential Variable Disposal Rates Initiative: Local governments would be required to implement variable disposal rates that base garbage collection fees on the amount of waste generated.

Surcharge-Based Disposal Disincentives: A negative incentive, or a disincentive, for continued reliance on disposal, would be the enactment of an across-the-board increase in the solid waste disposal fee that would apply to all waste disposed of by a city unless the community undertakes demonstrably effective recycling and yard trimmings diversion programs or has reached the 20% goal.

Required Composting: Recognizing that yard trimmings make up a significant portion of the state's solid waste stream, the 40% Task Force believes that requiring communities to establish some type of composting program may divert a significant amount of yard trimmings from disposal. To allow for local flexibility, local governments should be given the opportunity to choose from a variety of reasonable composting programs.

Required Residential Recycling: Communities would be required to provide recycling services to all of their residents. The Task Force believes that this requirement should be designed with sufficient flexibility to allow local governments to design a recycling program that meets the needs of the community while ensuring that all residents have the opportunity to recycle.

PHASE IV

On September 1, 2001, TNRCC would begin to assess, through the State Solid Waste Plan, whether reasonable progress had been made toward the goal of reducing waste by 40%. If reasonable progress has not been made, a yard trimmings disposal ban could be implemented by TNRCC effective September 1, 2003. This ban could only be undertaken if TNRCC determines that the potential still exists for significant reduction in the amount of yard trimmings entering Texas landfills and if TNRCC determines that a ban could have an additional significant impact on waste disposal.

Overall, it is clear from the strategy that the Task Force felt it important to continue with mostly voluntary measures to help establish the infrastructure necessary to support continuing waste reduction efforts, before more mandatory-type measures are considered, such as a yard trimmings ban. The strategy does, however, propose some possible mandatory measures, mostly under the later phases, and the costs, both to the state and to local entities, of implementing those measures would need to be further evaluated. Also, there may be some difficulties with implementing and administering some of the proposals and exemptions outlined in the strategy, and those difficulties would need to be resolved before a phased-in approach could be fully instituted.

Goals, Objectives, And Options

The plan includes nine major goals, and a number of specific objectives pertaining to each goal. These goals and objectives were developed to assist the Legislature, TNRCC and other state agencies, local governments, and other entities in further evaluating programs for managing MSW in Texas. The plan also outlines more detailed options under each objective, primarily geared toward TNRCC and other state agency actions. Additionally, the plan sets out several options under each goal that would necessitate legislative action. These options are presented for further consideration by the Legislature, but not as final recommendations for action.

Goal 1

Reduce The Amount Of Waste Disposed Of In MSW Landfills By 40%, Using 1992 Landfill Disposal Tonnages As A Base, And Accounting For Changes In Population, Import, And Export Of Solid Waste, And Other Factors.

In order to maintain the current program momentum, the plan proposes to retain the goal of a 40% reduction in waste disposal. However, a decision about the target date for achieving a 40% reduction will ultimately depend on how far the Legislature goes in looking at more aggressive waste reduction measures.

Objective 1.1 Promote increased and more effective participation by Texas communities, businesses, and industries in source reduction and recycling programs.

Objective 1.2 Promote the expansion of secondary materials processing capacity in the state.

Objective 1.3 Promote demand for Texas secondary materials by manufacturers.

Objective 1.4 Aggressively promote demand for recycled products.

Objective 1.5 Improve systems for information gathering, storage, and dissemination for all aspects of waste reduction.

Objective 1.6 Establish and maintain good coordination of effort among the various agencies involved in waste reduction activities.

LEGISLATIVE OPTIONS

■ Reauthorize the 40% waste disposal reduction goal and remove the existing goal target date from the statute.

■ Consider and further evaluate the 40% Task Force's 40% Waste Reduction Strategy.

■ Reduce the tire shredding requirement under the waste tire recycling program to a 2-inch minus chip, from the current nine inches, to better facilitate recycling of shredded tires.

■ Reduce or eliminate the nutrient additive fee placed on fertilizer for compost, to make compost more competitive in its use as a fertilizer.

Goal 2

Maintain 15 To 20 Years Of Disposal Capacity For The State, Considering The Effects Of Waste Reduction And Other Factors On Disposal

Objective 2.1 Ensure that all options for implementing Subtitle D requirements are pursued in the most effective and cost-efficient manner. *{Note - TNRCC is committed to not exceeding federal requirements, except where authorized by state law.}*

Objective 2.2 Make appropriate alternatives available to local governments to develop necessary disposal capacity.

Objective 2.3 Continue to encourage and support appropriate planning for the development of disposal capacity.

Objective 2.4 Provide the necessary training and education to local officials, administrators, operators, and others for them to make competent and effective decisions concerning the management of solid waste for their jurisdictions.

Objective 2.5 Ensure that those persons responsible for the operation of solid waste facilities have the appropriate knowledge and expertise to operate those facilities safely and effectively.

LEGISLATIVE OPTIONS

- Enact standard enabling legislation for the creation of regional MSW districts.

- Modify the Texas Solid Waste Disposal Act to reflect mandatory certification of facility operators, similar to certification requirements for water and wastewater operators.

Goal 3

Ensure That Adequate Collection And Transportation Services Are Provided To All Residents Of The State

Objective 3.1 Ensure that local solid waste managers have adequate data and planning information upon which to base collection decisions, and that they are fully aware of the options available to them.

Objective 3.2 Ensure that local governments that are obligated to assure that adequate services are provided are able to fulfill their obligations.

Objective 3.3 Ensure that waste transfer and transportation systems are established with due regard to proper planning, and are operated in an environmentally-sound manner.

LEGISLATIVE OPTIONS

- Evaluate whether requirements that counties of over 30,000 population and municipalities must assure that MSW management services are provided need to be further clarified.

Goal 4

Decrease By At Least 50% The Illegal Dumping And Littering Of MSW In Texas By The Year 2000

Objective 4.1 Obtain more complete information concerning the extent of illegal dumping and littering problems, and establish ongoing mechanisms to monitor the problems.

Objective 4.2 Continue and build upon existing statewide, regional, and local public information and education programs.

Objective 4.3 Continue and build upon existing statewide, regional, and local enforcement programs.

LEGISLATIVE OPTIONS

- Amend the *Texas Litter Abatement Act* to include felony charges for major illegal dumping offenses.

- Provide authority to TNRCC investigators to issue citations.

Goal 5

Identify And Document, By The Year 2000, All Remaining Major Old MSW Landfills, Rank Those Landfills According To Risk, And Begin Corrective Action At Those Posing A Substantial Risk To Public Health And The Environment

Objective 5.1 Ensure that all major old landfill sites are documented, and that appropriate information concerning those sites is available to the public.

Objective 5.2 Ensure that resources are available to adequately implement requirements of H.B. 2537.

Objective 5.3 Ensure that those sites posing a potential risk to public health and safety or the environment are prioritized and that a consistent policy is established to clean up those sites.

LEGISLATIVE OPTIONS

■ Clarify the statutory language addressing responsible party status for assigning liability for clean-up of old landfill problem sites.

■ Consider alternative mechanisms for funding a MSW “superfund” to clean up sites where there are no viable responsible parties.

Goal 6

Ensure That Solid Waste Management Activities In The State Are Conducted In The Most Efficient Manner, Through Regional Planning And Coordination

Objective 6.1 Maintain a regional coordination role for the COGs and support implementation of adopted regional solid waste management plans.

Objective 6.2 Establish a plan and procedures for maintaining and updating data, information, and policies established in the regional solid waste management plans.

Objective 6.3 Encourage development of local and subregional solid waste management plans, where appropriate.

LEGISLATIVE OPTIONS

■ Remove the requirement that local governments “must” develop a local solid waste management plan, and make it voluntary or at the discretion of TNRCC. *{Note - The 40% Task Force’s 40% Waste Reduction Strategy proposes the option of requiring communities to develop waste reduction plans. It is expected that any such plans would not be as comprehensive as the local solid waste management plans now required by statute.}*

Goal 7

Ensure The Provision Of Convenient, Economical, And Efficient Solid Waste Management Services In The Border Area, Along With Reducing Or Eliminating The Illegal Or Improper Disposal Of Solid Waste Along The Border

Objective 7.1 Obtain accurate data and information concerning border area solid waste in order to make appropriate decisions about provision of solid waste services.

Objective 7.2 Help to ensure the provision of convenient, economical, and efficient solid waste management services to border areas lacking in such services, while decreasing or eliminating illegal dumping.

Objective 7.3 Ensure that residents, operators, and officials in the border region are fully informed of all requirements and alternatives for the proper management of solid waste.

LEGISLATIVE OPTIONS

■ Further evaluate the need for additional land development controls, as well as ways to enforce current controls, along the border to stop the continued development of colonias.

Goal 8

Achieve Equity And Justice In The Siting, Regulation, Enforcement, And Operation Of MSW Facilities And Activities In The State

Objective 8.1 Support federal, state, and local efforts to obtain and maintain additional data and information concerning environmental equity issues as they relate to MSW management.

Objective 8.2 Support federal, state, and local efforts to assure equitable access to MSW decision-making and regulatory processes to historically under-represented groups and individuals.

LEGISLATIVE OPTIONS

■ No new legislative initiatives are proposed.

Goal 9

Adequately Manage Wastes Needing Special Treatment And Consideration In An Environmentally-Sound Manner

Objective 9.1 Ensure that residents are fully informed of the hazards associated with certain pesticides and other household and agricultural chemicals, and further encourage the use of least hazardous alternatives.

Objective 9.2 Provide technical and financial assistance to help cities establish household and agricultural chemical collection and recycling programs.

Objective 9.3 Establish state agency and local government policies and procedures for using environmentally-sensitive pesticides, cleaners, fertilizers, and other chemicals.

Objective 9.4 Increase the recycling and reuse of used tires to 100%.

Objective 9.5 Identify, prioritize, and facilitate the clean-up of all remaining illegal used tire sites in Texas, and ensure that no new illegal tire disposal sites are created.

Objective 9.6 Ensure proper transportation and management of liquid waste.

Objective 9.7 Ensure sufficient capacity of liquid waste processing facilities, as well as other alternatives for dealing with liquid wastes.

Objective 9.8 Obtain more complete and useful data and information concerning the generation, management, use, and disposal of municipal sludge, in order to make appropriate planning decisions.

Objective 9.9 Increase the beneficial use and recycling of municipal sludge.

LEGISLATIVE OPTIONS

■ Direct all state agencies to develop plans for the reduction or elimination of the use of potentially hazardous chemicals, and utilize environmentally-sensitive options.

■ Reduce the tire shredding requirement under the waste tire recycling program to a 2-inch minus chip, from the current nine inches, to better facilitate recycling of shredded tires.

■ Consider requiring all agencies that maintain state vehicles to incorporate the use of retreaded tires in applicable applications, where such use will be safe and reliable.

Conclusion

The plan is intended as a guiding document for the present and future management of municipal solid waste in Texas. The information, analyses, recommended goals and objectives, and recommendations included in the plan should prove valuable to more detailed

planning and decision-making at the state, regional, and local levels. It is clear that no single action will resolve all of our solid waste management concerns, and that the effective management of MSW in a state as large as Texas will require ongoing coordination and cooperation among all involved entities.

Endnotes

¹Texas State Data Center, "Projections of the Population of Texas and Counties in Texas by Age, Sex and Race/Ethnicity for 1990-2030" (Texas A&M University, February 1994).

²R.W. Beck and Associates, *1991 Recycling Rate and Market Research* (Texas Water Commission, January 1993).

³Franklin Associates, Ltd., *Characterization of Municipal Solid Waste in the United States: 1992 Update, Executive Summary* (U.S. Environmental Protection Agency, July 1992).

⁴Texas Water Commission, *The Cost Of Complying With Subtitle D (40 CFR §258), An Executive Summary Of The Municipal Solid Waste Groundwater Protection Cost Study* (Texas Water Commission, December 1992).



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